CS4471

Lab Assignment 7

Access Control List (version 1.0)

Group Number: 18

Group Members:

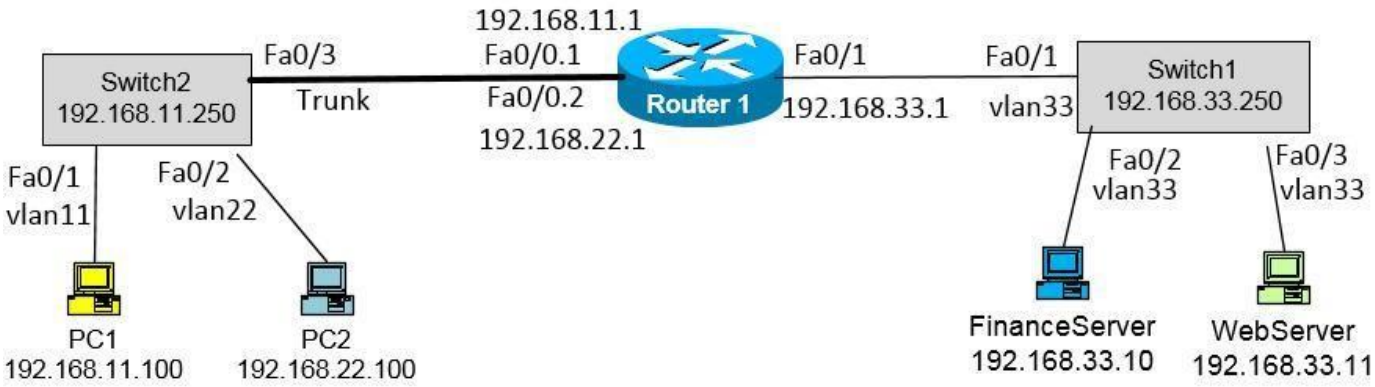
SmitKumar Patel	CIN: 306587208
Riddhiben Patel	CIN: 306612701
Alejandra Monteon	CIN: 302203894

Use Cisco Packet Tracer program to create the network shown below.

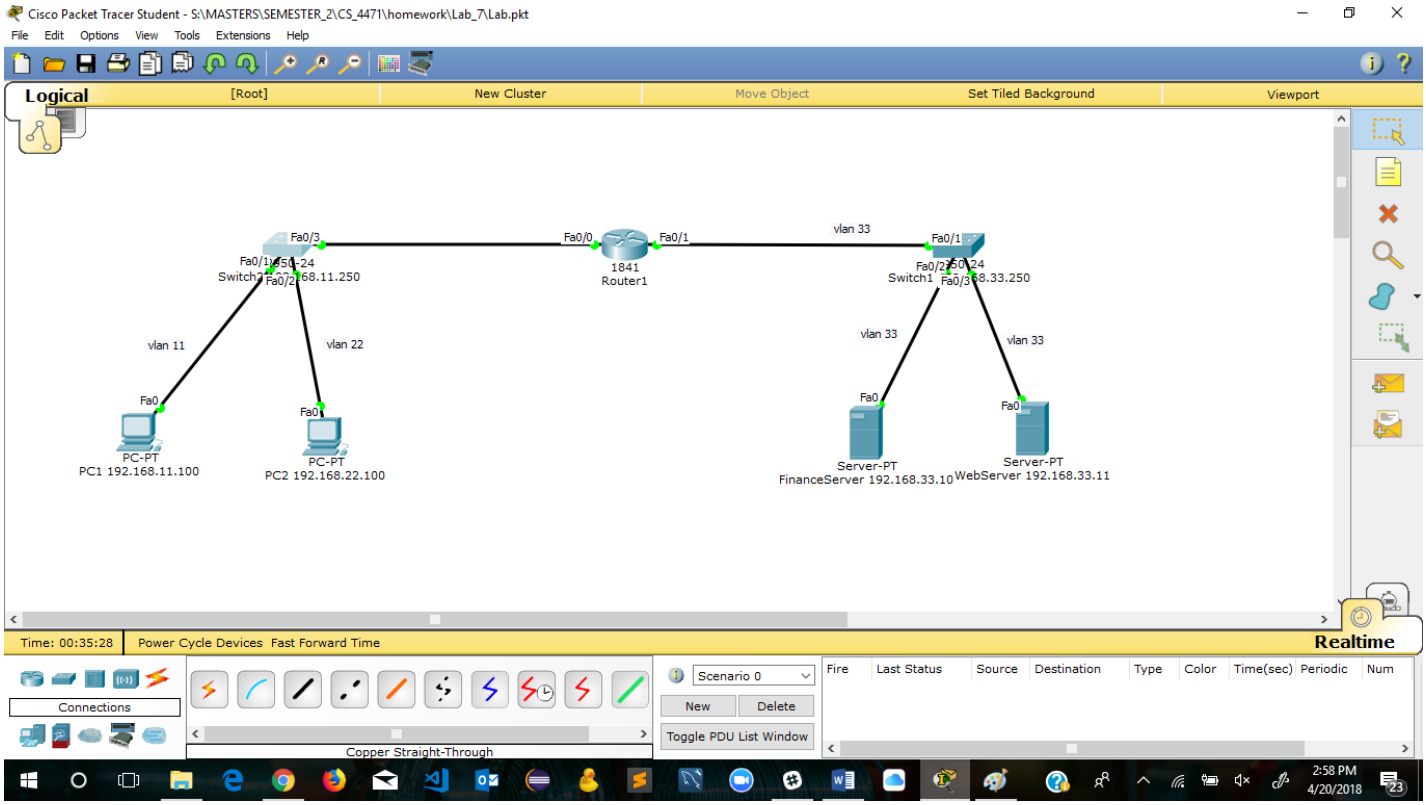
- configure the hostnames, IP address, and subnet mask(255.255.255.0) of all seven devices as shown.

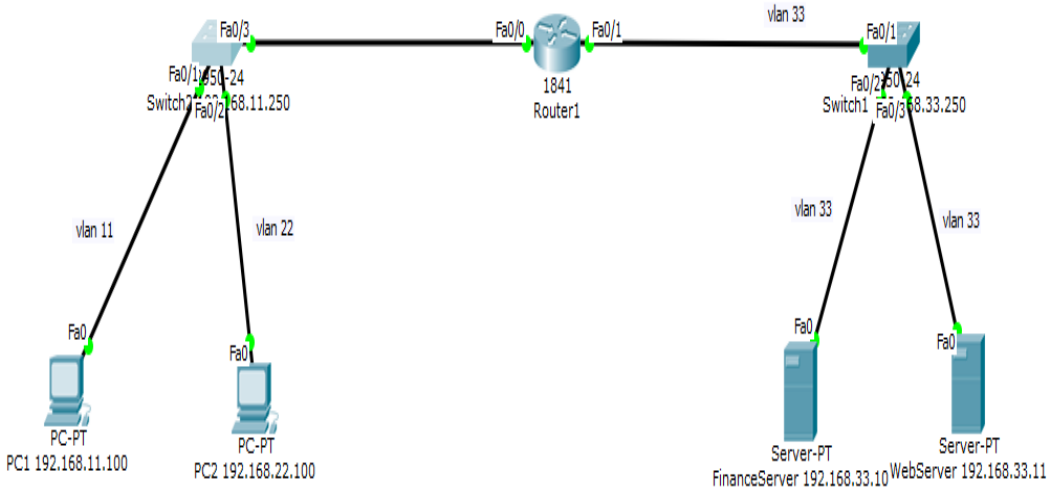
- interconnect the seven devices with appropriate Ethernet cables and verify that all six links are up

- configure the switch ports to be the vlans shown



1. **(20 pts) Submit screenshot of Cisco Packet Tracer network diagram created. Make sure that the port labels are shown (Options->Preferences->Show Port Labels)**





2. **(20 pts) On Router1, configure interface Fa0/1 with values shown in diagram. Create two subinterfaces on Fa0/0 to handle trunked traffic from vlan11 and vlan22. Subinterfaces Fa0/0.1 and Fa0/0.2 need to be configured with IP addresses shown and tagged with vlan id 11 or 22.**

   a. **Submit screenshot showing that from the command prompt window of PC1, you can ping the IP address of the other six devices.**

   b. **Submit screenshot showing that from the command prompt window of PC1, you can traceroute to the IP address of the other six devices.**

PC 2

```
PC>ping 192.168.22.100

Pinging 192.168.22.100 with 32 bytes of data:

Reply from 192.168.22.100: bytes=32 time=0ms TTL=127
Reply from 192.168.22.100: bytes=32 time=0ms TTL=127
Reply from 192.168.22.100: bytes=32 time=5ms TTL=127
Reply from 192.168.22.100: bytes=32 time=7ms TTL=127

Ping statistics for 192.168.22.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 3ms

PC>tracert 192.168.22.100

Tracing route to 192.168.22.100 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      192.168.11.1
  2    0 ms      0 ms      0 ms      192.168.22.100

Trace complete.
```

Switch 2

```
PC>ping 192.168.11.250

Pinging 192.168.11.250 with 32 bytes of data:

Reply from 192.168.11.250: bytes=32 time=0ms TTL=255
Reply from 192.168.11.250: bytes=32 time=0ms TTL=255
Reply from 192.168.11.250: bytes=32 time=0ms TTL=255
Reply from 192.168.11.250: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.11.250:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>tracert 192.168.11.250

Tracing route to 192.168.11.250 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      192.168.11.250

Trace complete.
```

Router

```
PC>ping 192.168.11.1

Pinging 192.168.11.1 with 32 bytes of data:

Reply from 192.168.11.1: bytes=32 time=0ms TTL=255
Reply from 192.168.11.1: bytes=32 time=0ms TTL=255
Reply from 192.168.11.1: bytes=32 time=0ms TTL=255
Reply from 192.168.11.1: bytes=32 time=3ms TTL=255

Ping statistics for 192.168.11.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 3ms, Average = 0ms

PC>ping 192.168.22.1

Pinging 192.168.22.1 with 32 bytes of data:

Reply from 192.168.22.1: bytes=32 time=0ms TTL=255
Reply from 192.168.22.1: bytes=32 time=1ms TTL=255
Reply from 192.168.22.1: bytes=32 time=8ms TTL=255
Reply from 192.168.22.1: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.22.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 8ms, Average = 2ms

PC>ping 192.168.33.1

Pinging 192.168.33.1 with 32 bytes of data:

Reply from 192.168.33.1: bytes=32 time=0ms TTL=255
Reply from 192.168.33.1: bytes=32 time=2ms TTL=255
Reply from 192.168.33.1: bytes=32 time=0ms TTL=255
Reply from 192.168.33.1: bytes=32 time=1ms TTL=255

Ping statistics for 192.168.33.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

```
PC>
PC>tracert 192.168.11.1

Tracing route to 192.168.11.1 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      192.168.11.1

Trace complete.

PC>tracert 192.168.22.1

Tracing route to 192.168.22.1 over a maximum of 30 hops:

  1    0 ms      0 ms      1 ms      192.168.22.1

Trace complete.

PC>tracert 192.168.33.1

Tracing route to 192.168.33.1 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      192.168.33.1

Trace complete.
```

Switch 1

```
PC>ping 192.168.33.250

Pinging 192.168.33.250 with 32 bytes of data:

Reply from 192.168.33.250: bytes=32 time=0ms TTL=254
Reply from 192.168.33.250: bytes=32 time=0ms TTL=254
Reply from 192.168.33.250: bytes=32 time=5ms TTL=254
Reply from 192.168.33.250: bytes=32 time=0ms TTL=254

Ping statistics for 192.168.33.250:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 5ms, Average = 1ms

PC>tracert 192.168.33.250

Tracing route to 192.168.33.250 over a maximum of 30 hops:

  1    0 ms       0 ms       0 ms       192.168.11.1
  2    0 ms       0 ms       0 ms       192.168.33.250

Trace complete.
```

Finance Server

```
PC>ping 192.168.33.10

Pinging 192.168.33.10 with 32 bytes of data:

Reply from 192.168.33.10: bytes=32 time=0ms TTL=127
Reply from 192.168.33.10: bytes=32 time=1ms TTL=127
Reply from 192.168.33.10: bytes=32 time=0ms TTL=127
Reply from 192.168.33.10: bytes=32 time=0ms TTL=127

Ping statistics for 192.168.33.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>tracert 192.168.33.10

Tracing route to 192.168.33.10 over a maximum of 30 hops:

  1    0 ms       0 ms       0 ms       192.168.11.1
  2    0 ms       1 ms       0 ms       192.168.33.10

Trace complete.
```

Web Server

```
PC>ping 192.168.33.11

Pinging 192.168.33.11 with 32 bytes of data:

Reply from 192.168.33.11: bytes=32 time=0ms TTL=127
Reply from 192.168.33.11: bytes=32 time=0ms TTL=127
Reply from 192.168.33.11: bytes=32 time=0ms TTL=127
Reply from 192.168.33.11: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.33.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>tracert 192.168.33.11

Tracing route to 192.168.33.11 over a maximum of 30 hops:

  1    0 ms       0 ms       0 ms       192.168.11.1
  2    0 ms       0 ms       0 ms       192.168.33.11

Trace complete.
```

3. **Suppose that you need to implement a security policy where (i) the WebServer should be accessible from any network, (ii) the FinanceServer should be accessible only to users in subnet 192.168.22.0/24 and inaccessible to users in subnet 192.168.11.0/24, and (iii) computers in network 192.168.11.0/24 are not allowed to directly interact with computers in network 192.168.22.0/24 . Create an appropriate Cisco ACL that can filter the traffic appropriately.**

```
Router#
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#access-list 101 deny ip 192.168.11.100 0.0.0.0 192.168.33.10 0.0.0.0
Router(config)#access-list 101 deny ip 192.168.11.100 0.0.0.0 192.168.22.0 0.0.0.255
Router(config)#access-list 101 permit ip any any
Router(config)#int fa0/0.1
Router(config-subif)#ip access-group 101 in
Router(config-subif)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#access-list 102 deny ip 192.168.22.100 0.0.0.0 192.168.11.0 0.0.0.255
Router(config)#access-list 102 permit ip any any
Router(config)#int fa0/0.2
Router(config-subif)#ip access-group 102 in
Router(config-subif)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

a. **(5 pt) which of the three router interfaces should be used to filter the traffic?**
   Ans: FA0/0.1 and FA0/0.2

b. **(5 pt) In which direction (inbound or outbound) should the ACL be applied on the interface you just specified?**
   Ans: FA 0/0 Port: INBOUND

c. **(20 pts) submit printout of output of "show access-lists"**

```
Router#show access-list
Extended IP access list 101
    10 deny ip host 192.168.11.100 host 192.168.33.10 (4 match(es))
    20 deny ip host 192.168.11.100 192.168.22.0 0.0.0.255 (4 match(es))
    30 permit ip any any (4 match(es))
Extended IP access list 102
    10 deny ip host 192.168.22.100 192.168.11.0 0.0.0.255 (4 match(es))
    20 permit ip any any (8 match(es))
Router#
Router#
```

4. **(30 pts) Verify that from the command prompt window of PC1 that you can still ping 192.168.33.11 but you no longer can ping 192.168.22.100 and 192.168.33.10. Submit printouts of output of "show runningconfig" from CLI of each switch and router.**

Router

```
Router#
Router#show running-config
Building configuration...

Current configuration : 1057 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
!
interface FastEthernet0/0.1
 encapsulation dot1Q 11
 ip address 192.168.11.1 255.255.255.0
 ip access-group 101 in
!
interface FastEthernet0/0.2
 encapsulation dot1Q 22
 ip address 192.168.22.1 255.255.255.0
 ip access-group 102 in
!
interface FastEthernet0/1
 ip address 192.168.33.1 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
!
access-list 101 deny ip host 192.168.11.100 host 192.168.33.10
access-list 101 deny ip host 192.168.11.100 192.168.22.0 0.0.0.255
access-list 101 permit ip any any
access-list 102 deny ip host 192.168.22.100 192.168.11.0 0.0.0.255
access-list 102 permit ip any any
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end
```

Switch2

```
Switch2#show running-config
Building configuration...

Current configuration : 1260 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch2
!
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
 switchport access vlan 11
 switchport mode access
!
interface FastEthernet0/2
 switchport access vlan 22
 switchport mode access
!
interface FastEthernet0/3
 switchport trunk allowed vlan 11-22
 switchport mode trunk
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan11
 ip address 192.168.11.250 255.255.255.0
!
interface Vlan22
 ip address 192.168.11.250 255.255.255.0
!
!
!
line con 0
!
line vty 0 4
 login
line vty 5 15
 login
!
!
end

Switch2#
```

Switch 1

```
Switch1>en
Switch1#show running-config
Building configuration...

Current configuration : 1225 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch1
!
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
 switchport access vlan 33
 switchport mode access
!
interface FastEthernet0/2
 switchport access vlan 33
 switchport mode access
!
interface FastEthernet0/3
 switchport access vlan 33
 switchport mode access
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan33
 ip address 192.168.33.250 255.255.255.0
!
ip default-gateway 192.168.33.1
!
!
!
!
!
!
line con 0
!
line vty 0 4
 login
line vty 5 15
 login
!
!
end


Switch1#
Switch1#
```